<u>**Remarks**</u>

This case has been carefully considered in light of the Office Action dated September 7, 2006 wherein: claim 7 was objected to because of an informality; claims 1-3 and 5-13 were rejected under 35 USC 112, first paragraph; claims 1-3, 5-6 and 11-13 were rejected under 35 USC 102(b) on Kanfi; claim 6 was rejected under 35 USC 103(a) on Sarkar in view of Kanfi; and claims 7-10 were rejected under 35 USC 103 on Uemura et al. in view of Bolosky et al. Reconsideration is respectfully requested.

Claims 1-3 and 5-14 remain pending in this case.

At the outset, the Applicants respectfully submit that the Finality of the Office Action is improper because a new ground of rejection based on a newly cited reference was given, to wit: the rejection under 35USC 103 on Uemura in view of Bolosky. The applicants have not previously had the opportunity to address the Bolosky reference at all. Moreover, there is no statement in the Office Action that the applicants' amendments to the claims necessitated the new ground of rejection. Indeed, the Office Action states in paragraph 3 on page 2 that "[t]he rejection of claims 1-3, 5-6 and 11-13 in the previous Office Action mailed is respectfully <u>maintained</u> and reiterated below for Applicant's convenience." However, the new ground of rejection under 35 USC 103 on Uemura and Bolosky was provided in paragraph 8 on pages 7-8, so the Finality of the Office Action is believed to be improper. Withdrawal of the Finality of the Office Action is thus respectfully requested.

The independent claims 1, 6, 7, 11, 12 and 13 have each been similarly amended to recite: "said write request providing the capability for application programs to [determine] <u>obtain</u> changes to said file by an incremental read of only blocks of said file that contain new data." Although the use of the term "determine" is believed to be supported by the specification, as indicated in the previous Office Action Response, dated July 17, 2006, this further amendment to the independent claims is made to more expressly track the language that is used consistently throughout the specification. No new matter has been added.

Regarding the rejection under 35 USC 112, the Examiner suggested that the language of the claims be amended. Specifically, the Examiner suggested the use of the following language,

or language similar to: "an incremental read of the actual data other than the metadata of only blocks of the file that contain new data." The Applicants have complied with the suggestion to amend the claims, as indicated above, but respectfully submit that the original claim language of "providing an indication that information stored in said at least one block of said file is new data" already covers how the metadata is handled per the applicants' invention; and, moreover, changing the claim terminology, as suggested, would create an antecedent basis problem. Therefore, after careful consideration of the Examiner's suggestion to amend the claim, the applicants believe that the newly amended claim language would clearly track the language used in the specification, e.g., particularly with regard to the passages in the specification cited in the previous Response dated July 17, 2006.

Therefore, the applicants respectfully request reconsideration of the rejection under 35 USC 112 in view of the current amendments to the claims.

Regarding the objection to claim 7 based on an informality, the applicants do not understand the objection, which was newly presented in this Final Office Action, but respectfully submit that the amendment to claim 7 should make the claim language more clear. It is respectfully further pointed out that claim 7, particularly as amended, is supported in paragraph [0065] of the specification. As further clarification, the applicants point out that "returning an indication of a hole", as recited in claim 7, is different from returning a predefined value, such as a zero, as Bolosky does, as explained below with respect to the cited reference. Withdrawal of this objection is thus respectfully requested.

The Applicants respectfully traverse the rejection under 35 USC 102 on Kanfi and request withdrawal thereof for the following reasons.

Even though the Examiner states that the rejection under 35 USC 102 on Kanfi is maintained and reiterated from the previous Office Action, the Examiner goes on to state on page 7 of the Final Office Action the following:

> With respect to (a)-(b) and (d), Examiner agreed with
> Applicant that Kanfi must read the table of data signatures
> associated with entire file and then, storing only those blocks of the
> file that have changed, i.e. blocks whose signature doesn't match
> with the signature of blocks that have been already archived (e.g..

see Col. 3, lines 38-50) However, this is similar to reading the
metadata (i.e. the dirty bit) associated with each block of the file
and then archiving only those blocks which contain new data in
the current invention.

The applicants respectfully submit that the Examiner has thus agreed with the applicants
and has clearly stated that the applicants' invention is distinct from Kanfi, at least with respect to
the use of data signatures, i.e., "Kanfi must read the table of data signatures associated with the
entire file." As explained in MPEP 706.02(a), "for anticipation under 35 U.S.C. 102, the
reference must teach every aspect of the claimed invention either explicitly or impliedly." As
noted, the Examiner has agreed that every aspect of the claimed invention is not met by Kanfi.
Therefore, the applicants believe that the rejection of claims 1-3, 5-6 and 11-13 under 35 USC
102 on Kanfi is improper and should be withdrawn.

Although the applicants believe, for the reasons set forth hereinabove, that the rejection
under 102 over Kanfi is improper and should be withdrawn, the applicants respectfully
furthermore submit that requiring the use of a table of data signatures associated with the entire
file that must be stored and read in its entirety by Kanfi would not render obvious the applicants'
invention. As pointed out in the previous Response dated July 17, 2006, this goes to a critical
distinction and advantage of the applicants' claimed invention over Kanfi. In particular, to
reiterate, although Kanfi only stores the blocks of a file that have changed, Kanfi must generate a
table of data signatures associated with the entire file, which must be read in its entirety before
storing the changed blocks.   Kanfi explains in column 4, lines 15-26:

Assume that, after a period of time following the initial archiving
of file F1, computer 10-1 communicates with computer 110 for the
purpose of storing in one of the archive memories 30-1 through 30-P, e.g.,
memory 30-1, the latest version of file F1. In doing so, computer 10-1
generates a signature for each block forming the latest version of file F1
and stores each such signature in sequence in a table formed in the internal
memory of computer 10-1. An example of the latter table is shown in
FIG. 4.

Following the foregoing, computer 10-1 then compares each entry
in the newly formed table 400 with its corresponding entry in previously
formed table 200.

This is in contrast to the Applicants' *incremental reading,* as recited in the claims. Specifically, the Applicants have provided a method for tracking incremental changes to a large and/or sparse file by providing the capability for application programs *"to obtain changes to said file by an incremental reading of only blocks of said file that contain new data,"* as recited in the amended claims. The Applicants advantageously avoid the drawbacks of using heuristic data signatures, as Kanfi does, which must be stored or regenerated with each backup, and which still require the reading of an entire file, as explicitly pointed out by the Applicants in the specification, e.g., in paragraphs [0004], [0006]-[0008] and [[0069]. As recited in the claims, as amended, the Applicants advantageously avoid these drawbacks (e.g., reciting in the claims as amended *"to obtain changes to said file by an incremental reading of only blocks of said file that contain new data,"*), such that the applicants' invention is not taught or even suggested by Kanfi.

Regarding the suggested combination of Kanfi with Sarkar under 35 USC 103 in rejecting claim 6, Kanfi requires storing a file of data signatures and reading the entire file to determine what the changes are. Moreover, the Sarkar reference requires scanning the entire file in order to come up with those that have changed since the last backup, as noted by the Examiner in the previous Office Action. In contrast, the Applicants *"determine changes to said file by an incremental reading of only blocks of said file that contain new data."* As pointed out in the previous Response dated July 17, 2006, this critical advantage over Kanfi (*an incremental read of* only the changed data) has been equated in the Office Action to *storing* only the changed data, without reference to how data is read and compared by Kanfi, and this is not correct.

Therefore, since both Sarkar and Kanfi require reading the entire file, any combination of Sarkar with Kanfi would not render obvious the Applicants' invention, as recited in the claims, particularly as amended. That is, neither Kanfi nor Sarkar, alone or in combination, would render obvious the Applicants' invention, including the limitation about obtaining *changes to said file by an incremental reading of only blocks of said file that contain new data.*

Therefore, claim 6 is believed to be patentably distinguishable from the suggested combination of Sarkar and Kanfi under 35 USC 103.
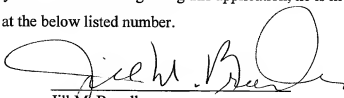
Regarding the combination of Uemura and Bolosky, the Applicants disagree with the Examiner that Uemura teaches a method for backing up sparse files, which is the subject of claims 7-10, as amended. The Applicants respectfully submit and reiterate that the differences between "incremental backup" and "backing up sparse files" is well-known in the art and is highlighted in the specification, for example, in paragraph [0027] where it is stated that "….another embodiment provides a method for retrieving all of the non-zero data in a sparse file (as opposed to the incremental changes only)."

As opposed to a method for backing up sparse files, Uemura describes an incremental backup system, including a storage unit that is accessed in block units of predetermined size for storing data to be backed up. Uemura uses difference map information to record the latest backup generation number to indicate when data in each block has been updated. Uemura further uses a management mechanism for managing backup generation numbers for each block.

In any event, even assuming *arguendo* that Uemura teaches backing up sparse files, the Examiner agrees that Uemura does not deal in any way with specific handling of holes in sparse files. Specifically, the applicants handle holes in sparse files by "returning an indication of a hole for each portion of the file not containing data specified by said user, such that said write request inserts holes into said backup file, thereby bringing said backup file up to date", as recited in amended claim 7. The applicants' "returning an indication of a hole" is completely different from Bolosky's returning zeroes to reads of unallocated regions of sparse files. That is, the applicants do not insert a predefined value (e.g., zero) like Bolosky does, but instead the applicants return *"an indication of a hole for each portion of the file not containing data specified by said user, such that said write request inserts holes into said backup file, thereby bringing said backup file up to date."* The applicants respectfully, but most vigorously, contend that returning a predefined zero from a read of unallocated space, as Bolosky does, is not equivalent to returning an indication of a hole, so that holes are inserted into the backup file.

Therefore, claims 7-10 are believed to be patentably distinguishable from the suggested combination of Uemura and Bolosky under 35 USC 103.

Should the Examiner have any further concerns regarding this application, he is invited to contact Applicants' representative at the below listed number.

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